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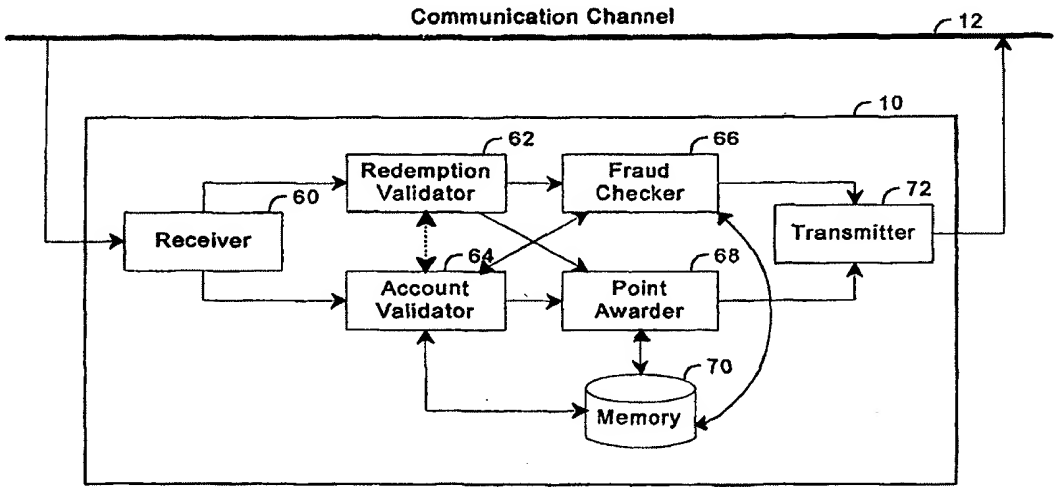

(57) **Abstract**

An apparatus receives a user identification code and a candidate coupon identification code from a client via a communication channel. Subsequently, the apparatus determines if the candidate coupon identification code is associated with a redeemable coupon by consulting a list of redeemable coupon identification codes. The list is a relatively small random subset of the total number of possible coupon identification codes in order to reduce fraud. If the candidate coupon identification code is redeemable, a control circuit awards a predetermined number of incentive points to an account identified by the user identification code. The incentive points may then be used to purchase merchandise or to reduce the price of merchandise from participating merchants.

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METHOD AND APPARATUS FOR ELECTRONICALLY REDEEMING COUPONS

TECHNICAL FIELD OF THE INVENTION

The present invention relates in general to electronic redemption of coupons and in particular to redeeming coupons over a network by receiving a predetermined coupon identification code and awarding incentive points.

BACKGROUND OF THE INVENTION

Often merchants want to give customers an incentive to try a particular product. Typically this is done with coupons. These coupons are normally removed from periodicals and/or product packaging and redeemed at the point of purchase in the form of a discount on purchased products.

However, this method suffers from certain drawbacks. First, the customer must have the coupons handy when the purchase is made in order to receive the discount. Second, an additional transaction must occur between the retail store and the wholesaler to complete the transaction. Third, demographics associated with the customer and the purchase may not be collected if the customer is not identified. And fourth, there is no additional opportunity to provide marketing information to the customer.

SUMMARY OF THE INVENTION

In accordance with a first aspect of the invention, a method for electronically redeeming coupons is provided. The method comprises the step of receiving a candidate coupon identification code. The method further comprises the step of determining if the candidate coupon identification code is a predetermined coupon identification code, the predetermined coupon identification code being associated with a redeemable status. Still further, the method comprises the step of awarding incentive points to a user account if the candidate coupon identification code is the predetermined coupon identification code.

In some preferred embodiments, the step of receiving comprises receiving a message via the Internet. In other preferred embodiments, the step of determining comprises comparing a representation of an alpha-numeric character of the candidate coupon identification code to a representation of an alpha-numeric character of the predetermined coupon identification code. In some embodiments, the method further comprises the step of collecting demographic information by associating the predetermined coupon identification code with a user identification code. In other embodiments the method further comprises the step of presenting marketing information by displaying a web page.

In accordance with a further aspect of the present invention, a method for electronically redeeming coupons is provided. The method comprises the step of defining a set of valid coupon identification codes.

The method further comprises the step of receiving a candidate coupon identification code. Still further, the method comprises the step of determining if the candidate coupon identification code is a member of the set of valid coupon identification codes. Additionally, the method comprises the step of determining a status associated with the valid coupon identification code if the candidate coupon identification code is the member of the set. Further, the method comprises the step of communicating a first error message if the status is indicative of an expired coupon identification code. Still further, the method comprises the steps of communicating a second error message if the status is indicative of a redeemed coupon identification code, and, awarding incentive points to a user account if the status is indicative of a redeemable coupon identification code.

In some preferred embodiments, the step of receiving comprises receiving a message via the Internet. In other preferred embodiments, the step of determining comprises comparing a representation of an alpha-numeric character of the candidate coupon identification code to a representation of an alpha-numeric character of the predetermined coupon identification code. In some embodiments, the first error message is substantially equivalent to the second error message.

In certain embodiments, the system further comprises the step of changing the status to redeemed. In some embodiments, the system further comprises the steps of receiving a user identification code; incrementing a counter if the status is indicative of one or more of a group

consisting of an expired coupon identification code, a redeemed coupon identification code, and an invalid coupon identification code; comparing the counter to a predetermined threshold; and, disabling a user account associated with the user identification code if the counter exceeds the predetermined threshold. In such an instance, the predetermined threshold may vary as a function of time.

In accordance with another aspect of the present invention, an apparatus for electronic coupon redemption is provided. The apparatus comprises an account validator in communication with the receiver for determining if the user identification code is associated with a valid user account. The system further comprises a redemption validator cooperating with the account validator for determining if the coupon identification code is associated with a redeemable coupon. Still further, the system comprises a point awarder cooperating with the redemption validation for awarding points when the coupon identification code is associated with a redeemable coupon. Additionally, the system comprises a point awarder cooperating with the redemption validation for awarding points when the coupon identification code is associated with a redeemable coupon. Further, the system comprises a point awarder cooperating with the redemption validation for awarding points when the coupon identification code is associated with a redeemable coupon. Additionally, the system comprises a memory device in communication with the point awarder and the account validator for storing the valid user account and the awarded points. Still

further, the system comprises a transmitter cooperating with the account validator, the redemption validator, and the point awarder for transmitting a message associated with a status of the coupon redemption.

In some preferred embodiments, the apparatus further comprises a fraud checker in communication with the account validator for counting a number of coupon identification codes associated with both the user identification code and a non-redeemable status. In some embodiments, the message is indicative of points being awarded. In certain embodiments, the message is indicative of an error condition.

BRIEF DESCRIPTION OF THE DRAWINGS

These and other features and advantages of the present invention will become more apparent from a detailed consideration of the following detailed description of certain preferred embodiments when taken in conjunction with the drawings in which:

FIG. 1 is a block diagram of a typical computer network capable of utilizing the present invention;

FIG. 2 is a flowchart of a program that can be implemented by the apparatus of FIG. 1 to electronically redeem coupons;

FIG. 3 is a flowchart of another program that can be implemented by the apparatus of FIG. 1 to electronically redeem coupons;

FIG. 4 is a block diagram of an apparatus, suitable for use as the apparatus depicted in FIG 1; and,

FIG. 5 is a table for storing valid coupon data.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Although the following description focuses on a personal computer communicating with a server over the Internet in order to electronically redeem a coupon, persons of ordinary skill in the art will readily appreciate that the techniques of the present invention are in no way limited to personal computers communicating with Internet servers. On the contrary, any system which might benefit from electronic redemption of coupons may employ the techniques shown herein. Such systems might include in store terminals and/or any communication channel to the redeeming apparatus.

An apparatus 10 constructed in accordance with the teachings of the invention is schematically illustrated in FIG. 1 in a preferred environment of use. A communication channel 12 is shared by the apparatus 10 and a plurality of clients 14. The communication channel 12 is preferably the Internet, but may be any wired or wireless communication medium capable of conveying a coupon identification code and a user identification code. Although a client 14 could take on many forms, such as a telephone, two-way pager, kiosk, teller machine, etc., in the typical case for the Internet, the client 14 is implemented as a web browser on a personal computer.

A flowchart of a program that can be implemented by the apparatus 10 to electronically redeem coupons in accordance with the teachings of the present invention is illustrated in FIG. 2. The programmed steps are typically performed by a control circuit such as a microprocessor as is conventional. Once the program is initiated the control circuit preferably receives a user identification code (block 20) from a client 14 via the communication channel 12. The user identification code may be any string uniquely identifying a particular account to which incentive points may be awarded. For example, the user identification code may be an account name or an account number. The user identification code may be entered in a dialog box or a form originating from the apparatus 10 (e.g., a web page), or, it may be sent automatically by the client 14 (e.g., encapsulated in a cookie).

Further, the user identification code may be in the form of a digital certificate or other digital identification means. A user identification code may be established when a user visits registration web site and completes a questionnaire. The questionnaire may be designed to solicit various demographic data of interest to web site proprietors. For example, a profile may include a participating user's age, income, occupation, etc. Once the questionnaire is completed, a profile server sets up an account for the new user and saves the user's demographic profile and associated user identification code to a database.

Further, the control circuit receives a candidate coupon identification code (block 22) from the client 14 via the communication channel 12. Preferably, the candidate coupon identification code is an alpha-numeric string entered in a dialog box or a form originating from the apparatus 10 (e.g., a web page). However, the candidate coupon identification code may be any digital signal entered in any manner (e.g., a series of ones and zeros entered by a magnetic card reader or a bar code reader). Coupons containing (e.g., printed on, bar coded, and/or magnetically coded) valid coupon identification codes may be located anyplace traditional coupons are located (e.g., in a box of cereal), and, may be redeemed at any time (not just at the time and place of purchase).

Subsequently, the apparatus 10 determines if the candidate coupon identification code is redeemable (block 24). In order to make this determination, the apparatus 10 preferably maintains a list of redeemable coupon identification codes. Further, the list is preferably a relatively small random subset of the total number of possible coupon identification codes in order to reduce the chance of fraud. For example, if the coupon identification code is sixteen characters long (preferably case sensitive letters and numbers), then there is approximately $4.76*10^{28}$ possible coupon identification codes. If the number of coupon identification codes randomly selected for the list of redeemable coupon identification codes (i.e., the codes available for coupons) is about $4*10^{13}$, the probability of guessing a redeemable coupon identification code is approximately one in

10^{15}. In one embodiment, the determination is made by comparing a representation of an alpha-numeric character of the candidate coupon identification code to a representation of an alpha-numeric character of the predetermined coupon identification code. Alternatively, well known digital signatures may be appended to coupon identification codes for authentication.

In the event that the candidate coupon identification code is not redeemable, the control circuit exits the program (block 24). However, if the candidate coupon identification code is redeemable, the control circuit awards a predetermined number of incentive points to an account identified by the user identification code (block 26). The incentive points may then be used to purchase merchandise or to reduce the price of merchandise from participating merchants. In some embodiments, the incentive points may be converted into a cash award. The number of incentive points awarded is determined using the coupon identification code as a key in a look up table accessible by the apparatus 10. A more detailed discussion of incentive points and exemplary uses thereof may be found in U.S. Patent Application Serial Number 09/080,946 which was filed on May 19th 1998 and is hereby incorporated by reference.

Once a customer is identified by the user identification code and a product is identified by the coupon identification code, the coupon identification code may be associated with a specific demographic profile associated with the user identification code. Further, additional marketing

information may be presented to the user. For example, a particular web page targeted to this type of customer buying this type of product could be displayed.

A flowchart of another program that can be implemented by the apparatus 10 to electronically redeem coupons in accordance with the teachings of the present invention is illustrated in FIG. 3. Again, the programmed steps are typically performed by a control circuit such as a microprocessor as is conventional. Once the program is initiated the control circuit preferably defines a set of valid coupon identification codes (block 30). Preferably, this is accomplished by randomly generating a relatively small number of coupon identification codes with a predefined minimum length. For example, $4*10^{13}$ unique coupon identification codes, each comprising sixteen alpha-numeric characters, could be randomly generated in a well known manner. Of course, a smaller or larger number of unique coupon identification codes could be randomly generated.

Subsequently, the control circuit preferably receives a user identification code (block 32) from a client 14 via the communication channel 12. As discussed above, the user identification code may be any string uniquely identifying a particular account to which incentive points may be awarded. After receiving a user identification code, the control circuit checks a list of valid user identification codes to determine if the program should proceed (block 34). If the user identification code is not valid, the control circuit exits the program. However, if the user

identification code is valid (i.e., it is in the list of valid user identification codes), then the control circuit waits to receive a candidate coupon identification code (block 36) from the client 14 via the communication channel 12. As discussed above, the candidate coupon identification code is preferably an alpha-numeric string entered in a dialog box or a form originating from the apparatus 10 (e.g., a web page). Of course, it will be readily appreciated by persons of ordinary skill in the art that the candidate coupon identification code could be received before the user identification code without departing from the scope of the invention.

Subsequently, the apparatus 10 determines a status associated with the candidate coupon identification code (block 38). Exemplary statuses include redeemable, redeemed, and expired. A redeemable status indicates that the coupon identification code is valid and is available for redemption. In other words, a user submitting a coupon identification code with a redeemable status may be awarded incentive points. A redeemed status indicates that although the coupon identification is valid (i.e., it is in the list of valid user identification codes), it has already been redeemed (i.e., associated incentive points have already been awarded) and is therefore unavailable for redemption. An expired status indicates that although the coupon identification is valid, a predetermined period of time has past, and, therefore, the coupon is unavailable for redemption.

In order to determine whether the candidate coupon identification code is valid (block 40) and to determine its status (block 38),

the apparatus 10 preferably maintains a list of valid coupon identification codes and their associated statuses in a memory. As discussed above, the list is preferably a relatively small random subset of the total number of possible coupon identification codes in order to reduce the chance of fraud. If the control circuit determines that the candidate coupon identification code is invalid (i.e., not in the subset), then a counter associated with the user identification code is preferably incremented (block 42). If the counter exceeds a predetermined threshold (ever, or as some function of time e.g., five failed attempts in one day), then the account associated with the user identification code is preferably disabled. Disabling the user's account may be permanent or temporary. Of course, it will be readily appreciated by persons of ordinary skill in the art that the step of determining if the candidate coupon identification code is valid could be performed prior to the step of determining an associated status without departing from the scope of the invention.

If the candidate coupon identification code is a valid coupon identification code, the status associated with the coupon identification code is tested against one or more predetermined statuses (blocks 44, 50, and 54). As discussed above, if the status is redeemable (block 44), the control circuit awards a predetermined number of incentive points to an account identified by the user identification code (block 46). As before, the number of incentive points is determined using the coupon identification code as a key in a look up table accessible by the apparatus 10.

Subsequently, the status is preferably changed to redeemed (block 48) in order to prevent any later redemptions. However, in one embodiment not employing unique identification codes, the status may be changed to redeemed only for this user identification code, thereby allowing other users to redeem the same coupon or another instance of the same coupon. Similarly, the status may be changed to redeemed only after a certain number of redemptions or after a certain number of redemptions by a particular user or after a certain number of redemptions by a particular user within a particular time frame.

If, when the status is tested (blocks 44, 50, and 54), the status is redeemed (block 50), the control circuit preferably communicates an error message to the client 14 that sent the identification codes (block 52). The error message may be generic (e.g., "an error occurred") or it may be specific (e.g., "that coupon has already been redeemed"). As with the occurrence of an invalid coupon identification code, the counter associated with the user identification code is preferably incremented (block 42), and, if the counter exceeds the predetermined threshold, then the account associated with the user identification code is preferably disabled.

Similarly if the status is expired (block 54), the control circuit preferably communicates an error message to the client 14 that sent the identification codes (block 56). The error message may be the same error message discussed above or a different error message. And, as before, the counter associated with the user identification code is preferably

incremented (block 42), and, if the counter exceeds the predetermined threshold, then the account associated with the user identification code is preferably disabled.

A block diagram of a device suitable for use as the apparatus 10 is illustrated in FIG. 4. The device comprises a set of coupled circuits, such as software instructions operating in a microprocessor. Coupon identification codes and user identification codes arrive over the communication channel 12 and are captured by a receiver 60 for processing in a known manner. Coupon identification codes are checked by a redemption validator 62, and, user identification codes are checked by an account validator 64.

Preferably, the redemption validator 62 determines if the coupon identification code is valid by attempting to locate the coupon identification code in a list of valid coupon identification codes as discussed above. The list may reside in the redemption validator 62, in a shared memory device 70, and/or elsewhere. If the coupon identification code is in the list then it is valid. If the coupon identification code is not in the list then it is not valid. Alternatively, the redemption validator 62 may determine if the coupon identification code is valid by attempting to verify a digital signature associated with the coupon identification code.

Similarly, the account validator 64 determines if the user identification code is valid by attempting to locate the user identification code in a list of valid user identification codes as discussed above. The list

may reside in the account validator 64, in a shared memory device 70, and/or elsewhere. If the user identification code is in the list then it is valid. If the user identification code is not in the list then it is not valid.

Both identification codes are then passed on to a fraud checker 66 and a point awarder 68. If an attempt is made to redeem an invalid coupon, the account may be disabled by the fraud checker 66. However, if a valid coupon is redeemed, the point awarder 68 awards a predetermined number of incentive points to an account identified by the user identification code. The incentive points may then be used to purchase merchandise or to reduce the price of merchandise from participating merchants as discussed above. The points are preferably awarded by increasing a number in a database. The database may be in the point awarder, in a shared memory device 70, and/or elsewhere.

Messages may be transmitted via the communication channel 12 to the client 14 by a transmitter 72 in a known manner. These messages may include error messages when an invalid coupon identification code is received or when a coupon identification code associated with a certain status is received. Further, messages may include a success message when incentive points are awarded. The success message may include the number of points that were awarded and/or other offers from a merchant.

A table representing a coupon data structure (e.g., look-up table or database) is illustrated in FIG. 5. Each coupon identification code

80 is associated with a number of incentive points 82 to be awarded upon redemption. Further, each coupon identification code 80 is associated with an expiration date 84. When the expiration date is reached, the status 86 is preferably changed to expired. Still further, when a coupon with a redeemable status 86 is redeemed, a user identification code 88 associated with the redeeming user is optionally recorded in this data structure and the status 86 is preferably changed to redeemed.

In summary, persons of ordinary skill in the art will readily appreciate that a method and apparatus for electronically redeeming coupons has been provided. Systems implementing the teachings of the invention can enjoy efficient electronic coupon redemption with increased demographics collection capabilities and follow up marketing opportunities.

The foregoing description has been presented for the purposes of illustration and description. It is not intended to be exhaustive or to limit the invention to the precise form disclosed. Many modifications and variations are possible in light of the above teachings. It is intended that the scope of the invention be limited not by this detailed description, but rather by the claims appended hereto.

What is Claimed is:

1. A method for electronically redeeming coupons comprising the steps of:

receiving a candidate coupon identification code;

determining if the candidate coupon identification code is a predetermined coupon identification code, the predetermined coupon identification code being associated with a redeemable status; and,

awarding incentive points to a user account if the candidate coupon identification code is the predetermined coupon identification code.

2. A method as described in claim 1, wherein the step of receiving comprises receiving a message via the Internet.

3. A method as described in claim 1, wherein the step of determining comprises comparing a representation of an alpha-numeric character of the candidate coupon identification code to a representation of an alpha-numeric character of the predetermined coupon identification code.

4. A method as described in claim 1, further comprising the step of associating the predetermined coupon identification code with a specific demographic profile associated with a user identification code.

5. A method as described in claim 1, further comprising the step of presenting marketing information by displaying a web page.

6. A method for electronically redeeming coupons comprising the steps of:

defining a set of valid coupon identification codes;

receiving a candidate coupon identification code;

determining if the candidate coupon identification code is a member of the set of valid coupon identification codes;

determining a status associated with the valid coupon identification code if the candidate coupon identification code is the member of the set;

communicating a first error message if the status is indicative of an expired coupon identification code;

communicating a second error message if the status is indicative of a redeemed coupon identification code; and,

awarding incentive points to a user account if the status is indicative of a redeemable coupon identification code.

7. A method as described in claim 6, wherein the step of receiving comprises receiving a message via the Internet.

8. A method as described in claim 6, wherein the step of determining if the candidate coupon identification code is a member further comprises comparing a representation of an alpha-numeric character of the candidate coupon identification code to a representation of an alpha-numeric character of a member of the set.

9. A method as described in claim 6, wherein the first error message is substantially equivalent to the second error message.

10. A method as described in claim 6, further comprising the step of changing the status to redeemed.

11. A method as described in claim 6, further comprising the steps of:

receiving a user identification code;

incrementing a counter if the status is indicative of one or more of a group consisting of an expired coupon identification code, a redeemed coupon identification code, and an invalid coupon identification code;

comparing the counter to a predetermined threshold; and,

disabling a user account associated with the user identification code if the counter exceeds the predetermined threshold.

12. A method as described in claim 11, wherein the predetermined threshold varies as a function of time.

13. An apparatus for electronic coupon redemption comprising:

a receiver for receiving a user identification code and a coupon identification code;

an account validator in communication with the receiver for determining if the user identification code is associated with a valid user account;

a redemption validator cooperating with the account validator for determining if the coupon identification code is associated with a redeemable coupon;

a point awarder cooperating with the redemption validation for awarding points when the coupon identification code is associated with a redeemable coupon;

a memory device in communication with the point awarder and the account validator for storing the valid user account and the awarded points; and,

a transmitter cooperating with the account validator, the redemption validator, and the point awarder for transmitting a message associated with a status of the coupon redemption.

14. An apparatus as described in claim 13, further comprising a fraud checker in communication with the account validator for counting a number of coupon identification codes associated with both the user identification code and a non-redeemable status.

15. An apparatus as described in claim 13, wherein the message is indicative of points being awarded.

16. An apparatus as described in claim 13, wherein the message is indicative of an error condition.

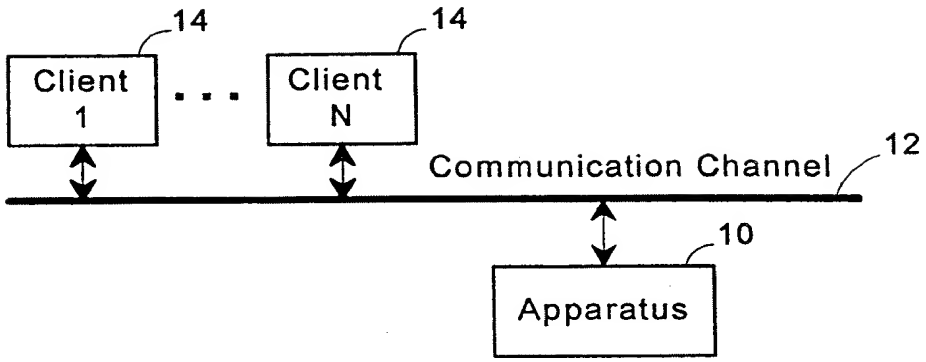

14
14
Client 1
Client N
12
Communication Channel
10
Apparatus

FIG. 1

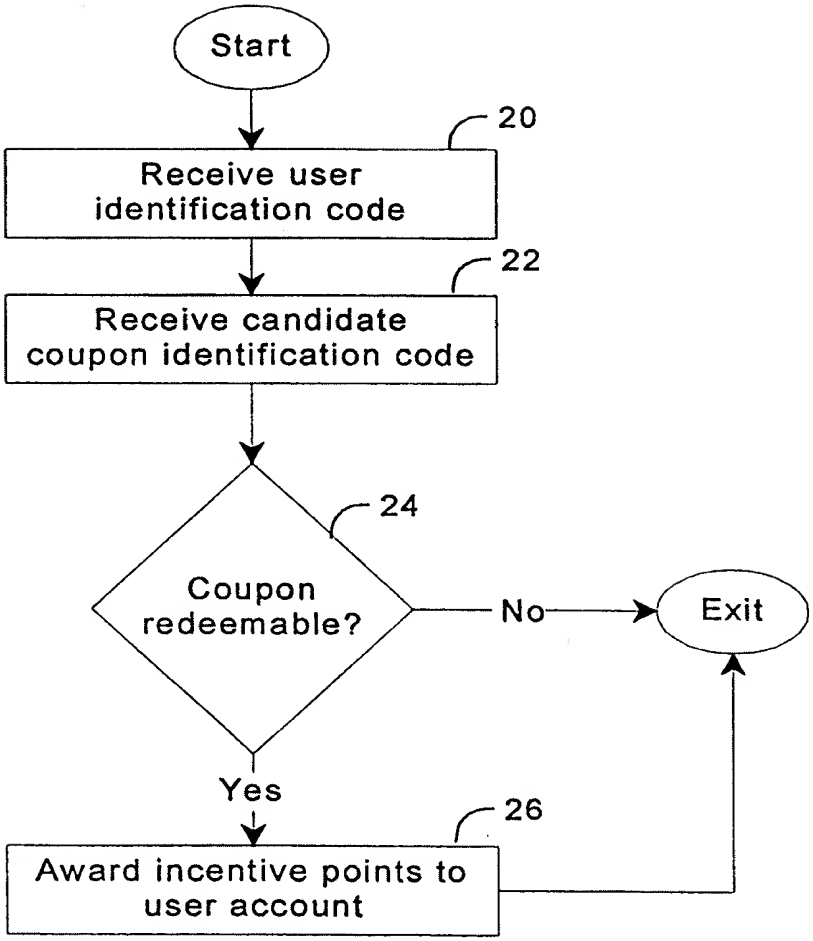
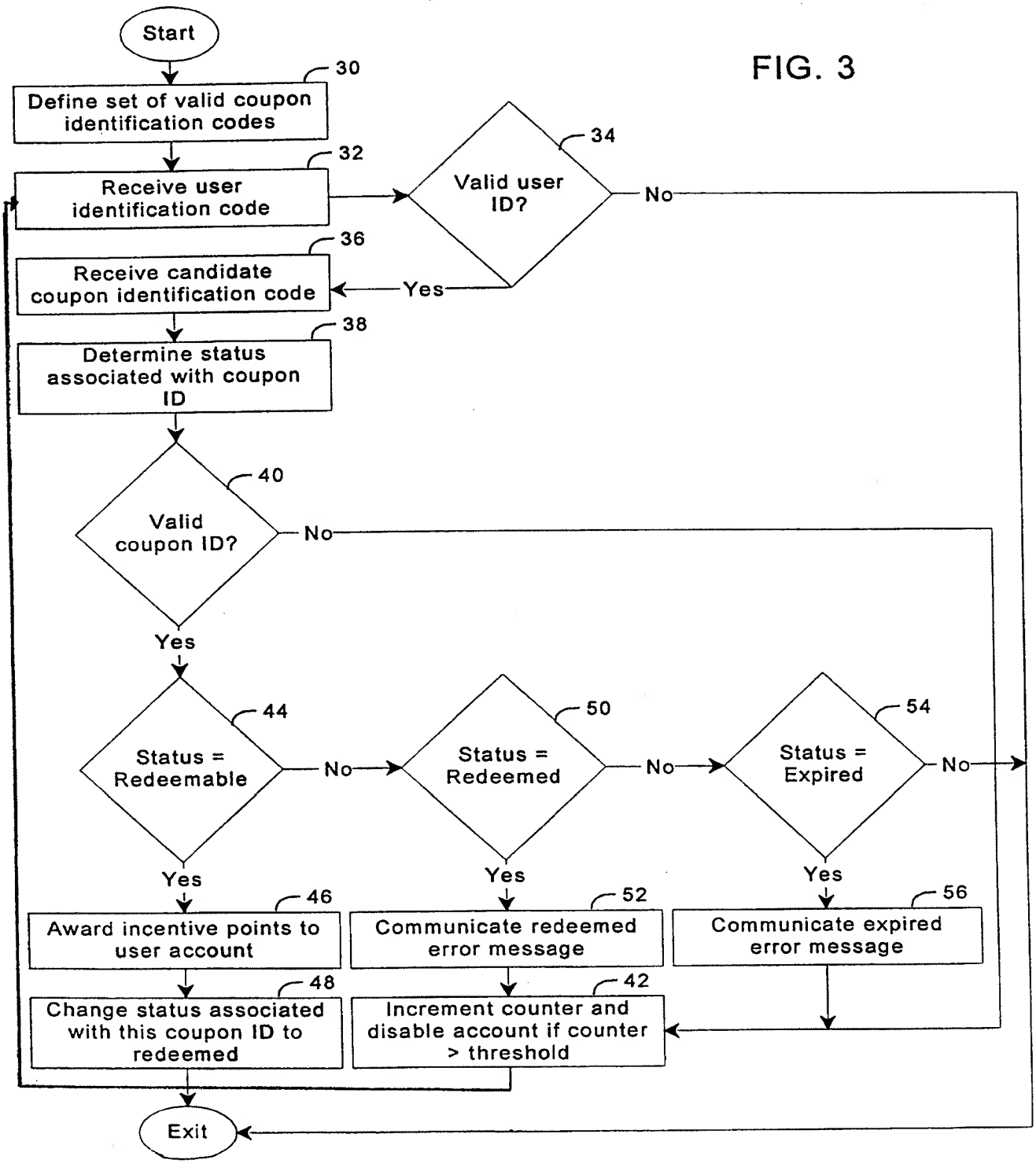

Start
20
Receive user identification code
22
Receive candidate coupon identification code
24
Coupon redeemable?
No
Exit
Yes
26
Award incentive points to user account

FIG. 2

FIG. 3


Start
30
Define set of valid coupon identification codes
32
Receive user identification code
34
Valid user ID?
No
Yes
36
Receive candidate coupon identification code
38
Determine status associated with coupon ID
40
Valid coupon ID?
No
Yes
44
Status = Redeemable
No
50
Status = Redeemed
No
54
Status = Expired
No
Yes
Yes
Yes
46
Award incentive points to user account
52
Communicate redeemed error message
56
Communicate expired error message
48
Change status associated with this coupon ID to redeemed
42
Increment counter and disable account if counter > threshold
Exit

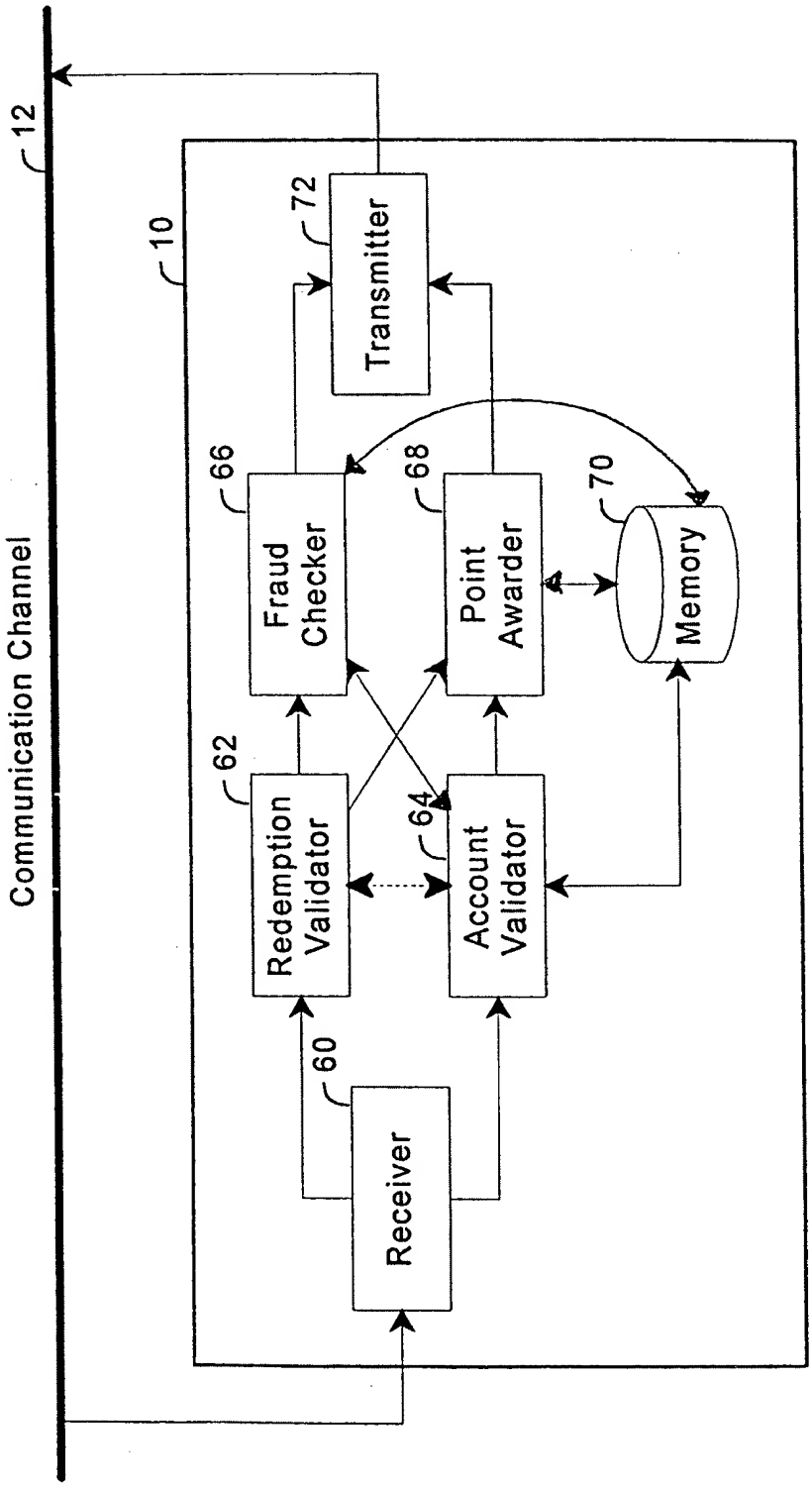

12
Communication Channel
10
72
Transmitter
66
Fraud Checker
68
Point Awarder
70
Memory
62
Redemption Validator
64
Account Validator
60
Receiver

FIG. 4

80 Coupon ID	82 Points	84 Expires	86 Status	88 User ID
1234ABCD	100	980706	Redeemed	JohnDoe12
5678EFGH	500	970101	Expired	
9012IJKL	1000	980815	Redeemable	
...	...	...	...	...

FIG. 5